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ABSTRACT

This manual is a guide to the "Motivated Strategies for Learning Questionnaire" (MSLQ) for assessing college students' motivational orientations and their use of different learning strategies for a college course. The MSLQ, based on a general cognitive view of motivation and learning strategies, contains two sections. The motivation section consists of 31 items that assess students' goals and value beliefs for a course. The learning strategies section includes 31 items regarding students' use of different cognitive and metacognitive strategies and 19 items concerning student management of different resources. The guide contains an introduction that details the survey's development, scoring, organization, and administration suggestions. Two sections explain the two components of the instrument in detail, listing the items, explaining their significance, and offering descriptive statistics. Also included in other sections are a sample fact sheet; a sample demographic sheet; a copy of the questionnaire itself; a sample feedback form; 11 references; and an appendix listing demographic information, scale correlations, and confirmatory factor analysis results. (JB)

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A Manual for the Use of the Motivated Strategies for Learning Questionnaire (MSLQ)

by
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I. INTRODUCTION

General Description

The Motivated Strategies for Learning Questionnaire (MSLQ) is a self-report instrument designed to assess college students' motivational orientations and their use of different learning strategies for a college course. The MSLQ is based on a general cognitive view of motivation and learning strategies. McKeachie, Pintrich, Lin, & Smith (1986) present the general theoretical framework that underlies the MSLQ. Other articles that discuss the theoretical framework include Pintrich (1988a,b; 1989), Pintrich & Garcia (1991), and Pintrich and DeGroot (1990).

There are essentially two sections to the MSLQ, a motivation section, and a learning strategies section. The motivation section consists of 31 items that assess students' goals and value beliefs for a course, their beliefs about their skill to succeed in a course, and their anxiety about tests in a course. The learning strategy section includes 31 items regarding students' use of different cognitive and metacognitive strategies. In addition, the learning strategies section includes 19 items concerning student management of different resources. There are 81 items on the 1991 version of the MSLQ.

Administering the MSLQ

The fifteen different scales on the MSLQ can be used together or singly. The scales are designed to be modular and can be used to fit the needs of the researcher or instructor. The instrument is designed to be given in class and takes approximately 20-30 minutes to administer.

A sample cover sheet (p. 33) and demographic sheet (p. 37) are included in this manual. The cover sheet requests the student's voluntary participation and briefly describes the MSLQ. The demographic sheet is an optional form the researcher can include to gather students' background data. Both the sample cover sheet and demographic sheet can be adapted to the individual researcher's needs. The questionnaire itself is located on pages 41-48.

Development of the MSLQ

The MSLQ has been under development formally since 1986 when NCRIPTAL was founded and informally since 1982 when we undertook our research on college student learning and teaching. The years 1982-1986 involved using a self-report instrument to assess students' motivation and use of learning strategies that varied from 50 to 140 items. We used these early instruments to evaluate the effectiveness of our "Learning to Learn" class here at the University of Michigan (see McKeachie, Pintrich, & Lin, 1985; Pintrich, McKeachie, & Lin, 1987). These instruments were used with over 1000 University of Michigan undergraduates enrolled in our course. These early instruments were subjected to the usual statistical and psychometric

analyses, including internal reliability coefficient computation, factor analyses, and correlations with academic performance and aptitude measures (e.g., SAT scores). We continually revised items on the basis of these results.

We began the formal development of the MSLQ when NCRIPTAL was founded in 1986. NCRIPTAL was funded for research on college populations excluding major research institutions like Michigan. We began using the MSLQ at three collaborating institutions in the Midwest, a four-year, public, comprehensive university; a small liberal arts college; and a community college. There were three major waves of data collection with previous versions of the MSLQ with students from these three institutions: 1986, 1987, and 1988. The items on these previous versions of the MSLQ were subjected to the usual statistical and psychometric analyses including internal reliability coefficient computation, factor analyses, and correlations with academic performance measures. The first wave of data collected in 1986 included 326 students; the second wave in 1987 included 687 students; and the third wave in 1988 included 758 students. After each of these waves we analyzed the data and rewrote items, and refined the conceptual model underlying our instrument.

Therefore, based on both theoretical and empirical analyses, we revised items and constructed scales. The final version of the MSLQ presented in this manual represents the past five years of work on these various waves of data.

Characteristics of the Sample

The data presented in this document were gathered from a sample of 380 Midwestern college students. Most of these students (N=356) attended a public, four-year university; the remaining students (N=24) attended a community college. This version of the MSLQ was administered towards the end of the Winter 1990 (January to May) semester. Thirty seven classrooms were sampled, spanning fourteen subject domains and five disciplines (natural science, humanities, social science, computer science, and foreign language). Additional demographic information about this sample can be found in Appendix A (pp. 67-71).

Item and Scale Statistics

The MSLQ scales are detailed on pages 9-29. This manual includes descriptions of each scale, as well as relevant statistics such as internal reliability coefficients, means, standard deviations, and zero order correlations with final course grade for each item and scale. Scale correlations are presented in Appendix B (p. 75). The scale correlations with final grade are significant, albeit moderate, demonstrating predictive validity. The Cronbach's alphas are robust, ranging from .52 to .93. Additionally, we have

included results from confirmatory factor analyses in Appendix C (pp. 79-87). These indicate that the MSLQ shows reasonable factor validity.

Scoring the MSLQ

Students rate themselves on a seven point Likert scale from "not at all true of me" to "very true of me." Scales are constructed by taking the mean of the items that make up that scale. For example, intrinsic goal orientation (see page 9) has four items. An individual's score for intrinsic goal orientation would be computed by summing the four items and taking the average.

Items marked as "reversed" are reverse coded items and must be reflected before scale construction. These negatively worded items and the ratings have to be reversed before an individual's score can be computed. If an item has to be reversed, a person who has circled 1 for that item now receives a score of 7 and so on. Accordingly, a 1 becomes a 7, a 2 becomes a 6, a 3 becomes a 5, a 4 remains a 4, a 5 becomes a 3, a 6 becomes a 2, and a 7 becomes a 1. The simplest way to reflect a reverse coded item is to subtract the original score from 8. For example, if the original score was 2 to the negatively worded item, one would compute $8 - 2 = 6$; 6 being the score for the positively worded version of that question. The statistics reported in this manual all represent the positively worded versions of the items.

Student Feedback

It has been our policy at NCRIPAL to provide students feedback on the MSLQ as a form of compensation for their participation in our studies. We have chosen nine scales of the MSLQ (Task Value, Self-Efficacy for Learning and Performance, Test Anxiety, Rehearsal, Elaboration, Organization, Metacognition, Time and Study Environment Management, and Effort Regulation) on which to give students feedback. The student's individual scores, the class' scale means, and quartile information are included in the feedback form. We provide descriptions of each scale and also offer suggestions to students on how to increase their levels of motivation and strategy use. Our feedback form is duplicated in this manual on pages 51-60. Again, the feedback form may be adapted to the researcher's or instructor's needs.

We have not provided norms for the MSLQ. It is designed to be used at the course level. We assume that students' responses to the questions might vary as a function of different courses, so that the same individual might report different levels of motivation or strategy use depending on the course. If the user desires norms for comparative purposes over time, we suggest the development of local norms for the different courses or instructors at the local institution.

II. MOTIVATION SCALES

Value Component: Intrinsic Goal Orientation

Goal orientation refers to the student's perception of the reasons why she is engaging in a learning task. On the MSLQ, goal orientation refers to student's general goals or orientation to the course as a whole. Intrinsic goal orientation concerns the degree to which the student perceives herself to be participating in a task for reasons such as challenge, curiosity, mastery. Having an intrinsic goal orientation towards an academic task indicates that the student's participation in the task is an end all to itself, rather than participation being a means to an end.

Item

1. In a class like this, I prefer course material that really challenges me so I can learn new things.
16. In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn.
22. The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible.
24. When I have the opportunity in this class, I choose course assignments that I can learn from even if they don't guarantee a good grade.

Alpha: .74

Descriptive Statistics

Item	<u>Mean</u>	<u>Standard Deviation</u>	<u>Correlation with Final Grade</u>
1	5.05	1.41	.22
16	5.68	1.38	.21
22	5.23	1.41	.17
24	4.14	1.58	.16
Scale	5.03	1.09	.25

Value Component: Extrinsic Goal Orientation

Extrinsic goal orientation complements intrinsic goal orientation, and concerns the degree to which the student perceives herself to be participating in a task for reasons such as grades, rewards, performance, evaluation by others, and competition. When one is high in extrinsic goal orientation, engaging in a learning task is the means to an end. The main concern the student has is related to issues that are not directly related to participating in the task itself (such as grades, rewards, comparing one's performance to that of others). Again, this refers to the general orientation to the course as a whole.

Item

- 7. Getting a good grade in this class is the most satisfying thing for me right now.
- 11. The most important thing for me right now is improving my overall grade point average, so my main concern in this class is getting a good grade.
- 13. If I can, I want to get better grades in this class than most of the other students.
- 30. I want to do well in this class because it is important to show my ability to my family, friends, employer, or others.

Alpha: .62

Descriptive Statistics

Item	<u>Mean</u>	<u>Standard Deviation</u>	<u>Correlation with Final Grade</u>
7	5.07	1.62	.10
11	5.32	1.71	-.09
13	5.31	1.73	.10
30	4.43	2.07	-.04
Scale	5.03	1.23	.02

Value Component: Task Value

Task value differs from goal orientation in that task value refers to the student's evaluation of the how interesting, how important, and how useful the **task** is ("What do I think of this task?"). Goal orientation refers to the reasons **why** the student is participating in the task ("Why am I doing this?"). High task value should lead to more involvement in one's learning. On the MSLQ, task value refers to students' perceptions of the course material in terms of interest, importance, and utility.

Item

4. I think I will be able to use what I learn in this course in other courses.
10. It is important for me to learn the course material in this class.
17. I am very interested in the content area of this course.
23. I think the course material in this class is useful for me to learn.
26. I like the subject matter of this course.
27. Understanding the subject matter of this course is very important to me.

Alpha: .90

Descriptive Statistics

Item	<u>Mean</u>	<u>Standard Deviation</u>	<u>Correlation with Final Grade</u>
4	5.33	1.72	.15
10	5.87	1.24	.15
17	5.32	1.64	.21
23	5.72	1.38	.18
26	5.46	1.66	.19
27	5.54	1.40	.22
Scale	5.54	1.25	.22

Expectancy Component: Control of Learning Beliefs

Control of learning refers to students' beliefs that their efforts to learn will result in positive outcomes. It concerns the belief that outcomes are contingent on one's own effort, in contrast to external factors such as the teacher. If students believe that their efforts to study make a difference in their learning, they should be more likely to study more strategically and effectively. That is, if the student feels that she can control her academic performance, she is more likely to put forth what is needed strategically to effect the desired changes.

Item

- 2. If I study in appropriate ways, then I will be able to learn the material in this course.
- 9. It is my own fault if I don't learn the material in this course.
- 18. If I try hard enough, then I will understand the course material.
- 25. If I don't understand the course material, it is because I didn't try hard enough.

Alpha: .68

Descriptive Statistics

Item	<u>Mean</u>	<u>Standard Deviation</u>	<u>Correlation with Final Grade</u>
2	6.12	1.14	.21
9	5.60	1.62	.06
18	6.14	1.02	.15
25	5.09	1.62	.01
Scale	5.74	.98	.13

Expectancy Component: Self-Efficacy for Learning and Performance

The items comprising this scale assess two aspects of expectancy: expectancy for success and self-efficacy. Expectancy for success refers to performance expectations, and relates specifically to task performance. Self-efficacy is a self-appraisal of one's ability to master a task. Self-efficacy includes judgments about one's ability to accomplish a task as well as one's confidence in one's skills to perform that task.

Item

5. I believe I will receive an excellent grade in this class.
6. I'm certain I can understand the most difficult material presented in the readings for this course.
12. I'm confident I can understand the basic concepts taught in this course.
15. I'm confident I can understand the most complex material presented by the instructor in this course.
20. I'm confident I can do an excellent job on the assignments and tests in this course.
21. I expect to do well in this class.
29. I'm certain I can master the skills being taught in this class.
31. Considering the difficulty of this course, the teacher, and my skills, I think I will do well in this class.

Alpha: .93

Expectancy Component: Self-Efficacy for Learning and Performance**Descriptive Statistics**

		<u>Mean</u>	<u>Standard Deviation</u>	<u>Correlation with Final Grade</u>
Item	5	4.95	1.59	.49
	6	5.18	1.62	.19
	12	6.36	.96	.23
	15	5.36	1.48	.22
	20	5.24	1.47	.39
	21	5.55	1.39	.46
	29	5.57	1.30	.28
	31	5.55	1.34	.44
Scale		5.47	1.14	.41

Affective Component: Test Anxiety

Test anxiety has been found to be negatively related to expectancies as well as academic performance. Test anxiety is thought to have two components: a worry, or cognitive component, and an emotionality component. The worry component refers to students' negative thoughts that disrupt performance, while the emotionality component refers to affective and physiological arousal aspects of anxiety. Cognitive concern and preoccupation with performance have been found to be the greatest sources of performance decrement. Training in the use of effective learning strategies and test-taking skills should help reduce the degree of anxiety.

Item

3. When I take a test I think about how poorly I am doing compared with other students.
8. When I take a test I think about items on other parts of the test I can't answer.
14. When I take tests I think of the consequences of failing.
19. I have an uneasy, upset feeling when I take an exam.
28. I feel my heart beating fast when I take an exam.

Alpha: .80

Descriptive Statistics

Item	<u>Mean</u>	<u>Standard Deviation</u>	<u>Correlation with Final Grade</u>
3	2.98	1.90	-.29
8	3.83	1.86	-.13
14	3.84	2.04	-.24
19	3.89	1.98	-.22
28	3.59	1.95	-.13
Scale	3.63	1.45	-.27

III. LEARNING STRATEGIES SCALES

Cognitive and Metacognitive Strategies: Rehearsal

Basic rehearsal strategies involve reciting or naming items from a list to be learned. These strategies are best used for simple tasks and activation of information in working memory rather than acquisition of new information in long-term memory. These strategies are assumed to influence the attention and encoding processes, but they do not appear to help students construct internal connections among the information or integrate the information with prior knowledge.

Item

- 39. When I study for this class, I practice saying the material to myself over and over.
- 46. When studying for this class, I read my class notes and the course readings over and over again.
- 59. I memorize key words to remind me of important concepts in this class.
- 72. I make lists of important terms for this course and memorize the lists.

Alpha: .69

Descriptive Statistics

Item	<u>Mean</u>	<u>Standard Deviation</u>	<u>Correlation with Final Grade</u>
39	4.30	2.01	-.04
46	4.80	1.84	.06
59	5.31	1.50	.07
72	3.68	2.10	.06
Scale	4.53	1.35	.05

Cognitive and Metacognitive Strategies: Elaboration

Elaboration strategies help students store information into long-term memory by building internal connections between items to be learned. Elaboration strategies include paraphrasing, summarizing, creating analogies, and generative note-taking. These help the learner integrate and connect new information with prior knowledge.

Item

- 53. When I study for this class, I pull together information from different sources, such as lectures, readings, and discussions.
- 62. I try to relate ideas in this subject to those in other courses whenever possible.
- 64. When reading for this class, I try to relate the material to what I already know.
- 67. When I study for this course, I write brief summaries of the main ideas from the readings and the concepts from the lectures.
- 69. I try to understand the material in this class by making connections between the readings and the concepts from the lectures.
- 81. I try to apply ideas from course readings in other class activities such as lecture and discussion.

Alpha: .76

Descriptive Statistics

Item	<u>Mean</u>	<u>Standard Deviation</u>	<u>Correlation with Final Grade</u>
53	5.29	1.65	.09
62	5.07	1.59	.21
64	5.56	1.28	.13
67	3.23	2.02	.15
69	5.35	1.50	.19
81	4.91	1.56	.13
Scale	4.91	1.08	.22

Cognitive and Metacognitive Strategies: Organization

Organization strategies help the learner select appropriate information and also construct connections among the information to be learned. Examples of an organizing strategies are clustering, outlining, and selecting the main idea in reading passages. Organizing is an active, effortful endeavor, and results in the learner being closely involved in the task. This should result in better performance.

Item

- 32. When I study the readings for this course, I outline the material to help me organize my thoughts.
- 42. When I study for this course, I go through the readings and my class notes and try to find the most important ideas.
- 49. I make simple charts, diagrams, or tables to help me organize course material.
- 63. When I study for this course, I go over my class notes and make an outline of important concepts.

Alpha: .64

Descriptive Statistics

Item	<u>Mean</u>	<u>Standard Deviation</u>	<u>Correlation with Final Grade</u>
32	3.70	2.17	.06
42	5.93	1.31	.21
49	3.04	1.94	.13
63	3.90	2.11	.12
Scale	4.14	1.33	.17

Cognitive and Metacognitive Strategies: Critical Thinking

Critical thinking refers to the degree to which students report applying previous knowledge to new situations in order to solve problems, reach decisions, or make critical evaluations with respect to standards of excellence.

Item

- 38. I often find myself questioning things I hear or read in this course to decide if I find them convincing.
- 47. When a theory, interpretation, or conclusion is presented in class or in the readings, I try to decide if there is good supporting evidence.
- 51. I treat the course material as a starting point and try to develop my own ideas about it.
- 66. I try to play around with ideas of my own related to what I am learning in this course.
- 71. Whenever I read or hear an assertion or conclusion in this class, I think about possible alternatives.

Alpha: .80

Descriptive Statistics

Item	<u>Mean</u>	<u>Standard Deviation</u>	<u>Correlation with Final Grade</u>
38	3.83	1.77	.04
47	4.36	1.68	.13
51	3.81	1.85	.08
66	4.66	1.74	.17
71	4.15	1.49	.13
Scale	4.16	1.28	.15

Cognitive and Metacognitive Strategies: Metacognitive Self-Regulation

Metacognition refers to the awareness, knowledge, and control of cognition. We have focused on the control and self-regulation aspects of metacognition on the MSLQ, not the knowledge aspect. There are three general processes that make up metacognitive self-regulatory activities: planning, monitoring, and regulating. Planning activities such as goal setting and task analysis help to activate, or prime, relevant aspects of prior knowledge that make organizing and comprehending the material easier. Monitoring activities include tracking of one's attention as one reads, and self-testing and questioning: these assist the learner in understanding the material and integrating it with prior knowledge. Regulating refers to the fine-tuning and continuous adjustment of one's cognitive activities. Regulating activities are assumed to improve performance by assisting learners in checking and correcting their behavior as they proceed on a task.

Item

- 33. During class time I often miss important points because I'm thinking of other things. (REVERSED)
- 36. When reading for this course, I make up questions to help focus my reading.
- 41. When I become confused about something I'm reading for this class, I go back and try to figure it out.
- 44. If course materials are difficult to understand, I change the way I read the material.
- 54. Before I study new course material thoroughly, I often skim it to see how it is organized.
- 55. I ask myself questions to make sure I understand the material I have been studying in this class.
- 56. I try to change the way I study in order to fit the course requirements and instructor's teaching style.
- 57. I often find that I have been reading for class but don't know what it was all about. (REVERSED)
- 61. I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying.
- 76. When studying for this course I try to determine which concepts I don't understand well.
- 78. When I study for this class, I set goals for myself in order to direct my activities in each study period.
- 79. If I get confused taking notes in class, I make sure I sort it out afterwards.

Metacognitive Self-Regulation (continued)

Alpha: .79

Descriptive Statistics

	<u>Mean</u>	<u>Standard Deviation</u>	<u>Correlation with Final Grade</u>
Item			
33	4.92	1.68	.25
36	2.98	1.75	.03
41	5.79	1.19	.23
44	4.07	1.61	.12
54	4.51	1.80	.17
55	4.12	1.78	.05
56	4.61	1.68	.16
57	4.81	1.66	.27
61	4.50	1.60	.21
76	5.12	1.31	.19
78	4.53	1.67	.19
79	4.55	1.73	.16
Scale	4.54	.90	.30

Resource Management Strategies: Time and Study Environment

Besides self-regulation of cognition, students must be able to manage and regulate their time and their study environments. Time management involves scheduling, planning, and managing one's study time. This includes not only setting aside blocks of time to study, but the effective use of that study time, and setting realistic goals. Time management varies in level, from an evening of studying to weekly and monthly scheduling. Study environment management refers to the setting where the student does her class work. Ideally, the learner's study environment should be organized, quiet, and relatively free of visual and auditory distractions.

Item

- 35. I usually study in a place where I can concentrate on my course work.
- 43. I make good use of my study time for this course.
- 52. I find it hard to stick to a study schedule. (REVERSED)
- 65. I have a regular place set aside for studying.
- 70. I make sure I keep up with the weekly readings and assignments for this course.
- 73. I attend class regularly.
- 77. I often find that I don't spend very much time on this course because of other activities. (REVERSED)
- 80. I rarely find time to review my notes or readings before an exam. (REVERSED)

Alpha: .76

Resource Management Strategies: Time and Study Environment

Descriptive Statistics

	<u>Mean</u>	<u>Standard Deviation</u>	<u>Correlation with Final Grade</u>
Item			
35	5.51	1.53	.23
43	4.46	1.65	.26
52	3.73	2.01	.23
65	4.58	2.03	.15
70	4.50	1.91	.12
73	6.49	.98	.17
77	3.89	1.80	.07
80	5.80	1.48	.20
Scale	4.87	1.05	.28

Resource Management Strategies: Effort Regulation

Self-regulation also includes students' ability to control their effort and attention in the face of distractions and uninteresting tasks. Effort management is self-management, and reflects a commitment to completing one's study goals, even when there are difficulties or distractions. Effort management is important to academic success because it not only signifies goal commitment, but also regulates the continued use of learning strategies.

Item

- 37. I often feel so lazy or bored when I study for this class that I quit before I finish what I planned to do. (REVERSED)
- 48. I work hard to do well in this class even if I don't like what we are doing.
- 60. When course work is difficult, I give up or only study the easy parts. (REVERSED)
- 74. Even when course materials are dull and uninteresting, I manage to keep working until I finish.

Alpha: .69

Descriptive Statistics

Item	<u>Mean</u>	<u>Standard Deviation</u>	<u>Correlation with Final Grade</u>
37	4.87	1.73	.15
48	5.26	1.45	.28
60	5.52	1.42	.29
74	5.36	1.47	.23
Scale	5.25	1.10	.32

Resource Management: Peer Learning

Collaborating with one's peers has been found to have positive effects on achievement. Dialogue with peers can help a learner clarify course material and reach insights one may not have attained on one's own.

Item

- 34. When studying for this course, I often try to explain the material to a classmate or a friend.
- 45. I try to work with other students from this class to complete the course assignments.
- 50. When studying for this course, I often set aside time to discuss the course material with a group of students from the class.

Alpha: .76

Descriptive Statistics

Item	<u>Mean</u>	<u>Standard Deviation</u>	<u>Correlation with Final Grade</u>
34	3.48	1.92	.07
45	2.94	1.97	-.15
50	2.24	1.64	-.07
Scale	2.89	1.53	-.06

Resource Management: Help Seeking

Another aspect of the environment that the student must learn to manage is the support of others. This includes both peers and instructors. Good students know when they don't know something and are able to identify someone to provide them with some assistance. There is a large body of research that indicates that peer help, peer tutoring, and individual teacher assistance facilitate student achievement.

Item

40. Even if I have trouble learning the material in this class, I try to do the work on my own, without help from anyone.
(REVERSED)
58. I ask the instructor to clarify concepts I don't understand well.
68. When I can't understand the material in this course, I ask another student in this class for help.
75. I try to identify students in this class whom I can ask for help if necessary.

Alpha: .52

Descriptive Statistics

Item	<u>Mean</u>	<u>Standard Deviation</u>	<u>Correlation with Final Grade</u>
40	3.26	1.80	-.05
58	4.21	1.89	.24
68	3.73	1.99	-.06
75	4.15	2.00	-.08
Scale	3.84	1.23	.02

IV. SAMPLE FACE SHEET

**MOTIVATED STRATEGIES FOR LEARNING QUESTIONNAIRE
(MSLQ)**

National Center for Research to Improve Postsecondary Teaching and Learning
(NCRIPTAL)

School of Education, The University of Michigan
Ann Arbor, Michigan

Your instructor is participating in a study of college teaching and learning, in cooperation with the University of Michigan. We would like to ask for your participation in the study. As part of the study, over the course of the semester you will be asked to fill out several questionnaires related to your motivation and learning in this class. In addition, we would like to collect information from your college transcript and entrance tests scores. If you participate, you will receive feedback on your learning skills and motivation that may be useful to you in your college career. **YOUR PARTICIPATION IS VOLUNTARY AND NOT RELATED IN ANY WAY TO YOUR GRADE IN THIS CLASS.** You may decide to participate now but you can withdraw from the study at any time during the course of the semester with no penalty. All your responses are strictly confidential and only members of the research team will see your individual responses.

The attached questionnaire asks you about your study habits, your learning skills, and your motivation for work in this course. **THERE ARE NO RIGHT OR WRONG ANSWERS TO THIS QUESTIONNAIRE. THIS IS NOT A TEST.** We want you to respond to the questionnaire as accurately as possible, reflecting your own attitudes and behaviors in this course. Your answers to this questionnaire will be analyzed by computer and you will receive an individual report in several weeks. The individual report will help you identify motivation and learning skills that you may want to improve during the term. Additionally, your instructor will receive feedback on your class as a whole, which will allow him or her to tailor the course to class needs. Please sign below if you would like to be involved in this study. Thank you for your cooperation.

Name (Print) _____

Signature _____

Student ID Number/Social Security Number _____

Instructor's Name _____

Course Title and Meeting Time _____

Today's Date _____

V. SAMPLE DEMOGRAPHICS SHEET

DEMOGRAPHIC INFORMATION

1. Gender (circle one). Male Female
2. What year did you graduate from high school? _____
3. Class level (circle one).

Freshman
Sophomore
Junior
Senior
4. Ethnic background (circle one).

Afro-American
or Black
Asian-
American
Caucasian
Hispanic
or Spanish
Speaking
Other
5. How many hours per week do you work for pay? _____
6. How many other college level courses have you had in this subject area? _____
7. How many classes are you taking this term? _____
8. How many hours a week do you study for this course? _____
9. Reasons for taking this class (circle yes or no for each item).

a. fulfills distribution requirement	Yes	No
b. content seems interesting	Yes	No
c. is required of all students at college	Yes	No
d. will be useful to me in other courses	Yes	No
e. is an easy elective	Yes	No
f. will help improve my academic skills	Yes	No
g. is required for major (program)	Yes	No
h. was recommended by a friend	Yes	No
i. was recommended by a counselor	Yes	No
j. will improve career prospects	Yes	No
k. fit into my schedule	Yes	No

VI. THE MOTIVATED STRATEGIES FOR LEARNING QUESTIONNAIRE

Part A. Motivation

The following questions ask about your motivation for and attitudes about this class. **Remember there are no right or wrong answers, just answer as accurately as possible.** Use the scale below to answer the questions. If you think the statement is very true of you, circle 7; if a statement is not at all true of you, circle 1. If the statement is more or less true of you, find the number between 1 and 7 that best describes you.

- | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--|--------------------------|---|---|---|---|---|--------------------|
| | not at all
true of me | | | | | | very true
of me |
| 1. In a class like this, I prefer course material that really challenges me so I can learn new things. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. If I study in appropriate ways, then I will be able to learn the material in this course. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. When I take a test I think about how poorly I am doing compared with other students. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. I think I will be able to use what I learn in this course in other courses. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. I believe I will receive an excellent grade in this class. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. I'm certain I can understand the most difficult material presented in the readings for this course. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. Getting a good grade in this class is the most satisfying thing for me right now. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. When I take a test I think about items on other parts of the test I can't answer. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

		not at all true of me							very true of me						
9.	It is my own fault if I don't learn the material in this course.	1	2	3	4	5	6	7							
10.	It is important for me to learn the course material in this class.	1	2	3	4	5	6	7							
11.	The most important thing for me right now is improving my overall grade point average, so my main concern in this class is getting a good grade.	1	2	3	4	5	6	7							
12.	I'm confident I can learn the basic concepts taught in this course.	1	2	3	4	5	6	7							
13.	If I can, I want to get better grades in this class than most of the other students.	1	2	3	4	5	6	7							
14.	When I take tests I think of the consequences of failing.	1	2	3	4	5	6	7							
15.	I'm confident I can understand the most complex material presented by the instructor in this course.	1	2	3	4	5	6	7							
16.	In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn.	1	2	3	4	5	6	7							
17.	I am very interested in the content area of this course.	1	2	3	4	5	6	7							
18.	If I try hard enough, then I will understand the course material.	1	2	3	4	5	6	7							
19.	I have an uneasy, upset feeling when I take an exam.	1	2	3	4	5	6	7							

	not at all true of me						very true of me
20. I'm confident I can do an excellent job on the assignments and tests in this course.	1	2	3	4	5	6	7
21. I expect to do well in this class.	1	2	3	4	5	6	7
22. The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible.	1	2	3	4	5	6	7
23. I think the course material in this class is useful for me to learn.	1	2	3	4	5	6	7
24. When I have the opportunity in this class, I choose course assignments that I can learn from even if they don't guarantee a good grade.	1	2	3	4	5	6	7
25. If I don't understand the course material, it is because I didn't try hard enough.	1	2	3	4	5	6	7
26. I like the subject matter of this course.	1	2	3	4	5	6	7
27. Understanding the subject matter of this course is very important to me.	1	2	3	4	5	6	7
28. I feel my heart beating fast when I take an exam.	1	2	3	4	5	6	7
29. I'm certain I can master the skills being taught in this class.	1	2	3	4	5	6	7
30. I want to do well in this class because it is important to show my ability to my family, friends, employer, or others.	1	2	3	4	5	6	7
31. Considering the difficulty of this course, the teacher, and my skills, I think I will do well in this class.	1	2	3	4	5	6	7

Part B. Learning Strategies

The following questions ask about your learning strategies and study skills for this class. Again, there are no right or wrong answers. Answer the questions about how you study in this class as accurately as possible. Use the same scale to answer the remaining questions. If you think the statement is very true of you, circle 7; if a statement is not at all true of you, circle 1. If the statement is more or less true of you, find the number between 1 and 7 that best describes you.

- | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|--------------------------|---|---|---|---|---|--------------------|
| | not at all
true of me | | | | | | very true
of me |
| 32. When I study the readings for this course, I outline the material to help me organize my thoughts. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 33. During class time I often miss important points because I'm thinking of other things. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 34. When studying for this course, I often try to explain the material to a classmate or friend. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 35. I usually study in a place where I can concentrate on my course work. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 36. When reading for this course, I make up questions to help focus my reading. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 37. I often feel so lazy or bored when I study for this class that I quit before I finish what I planned to do. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 38. I often find myself questioning things I hear or read in this course to decide if I find them convincing. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 39. When I study for this class, I practice saying the material to myself over and over. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

	not at all true of me							very true of me
40. Even if I have trouble learning the material in this class, I try to do the work on my own, without help from anyone.	1	2	3	4	5	6	7	
41. When I become confused about something I'm reading for this class, I go back and try to figure it out.	1	2	3	4	5	6	7	
42. When I study for this course, I go through the readings and my class notes and try to find the most important ideas.	1	2	3	4	5	6	7	
43. I make good use of my study time for this course.	1	2	3	4	5	6	7	
44. If course readings are difficult to understand, I change the way I read the material.	1	2	3	4	5	6	7	
45. I try to work with other students from this class to complete the course assignments.	1	2	3	4	5	6	7	
46. When studying for this course, I read my class notes and the course readings over and over again.	1	2	3	4	5	6	7	
47. When a theory, interpretation, or conclusion is presented in class or in the readings, I try to decide if there is good supporting evidence.	1	2	3	4	5	6	7	
48. I work hard to do well in this class even if I don't like what we are doing.	1	2	3	4	5	6	7	
49. I make simple charts, diagrams, or tables to help me organize course material.	1	2	3	4	5	6	7	

	not at all true of me							very true of me						
50.	When studying for this course, I often set aside time to discuss course material with a group of students from the class.	1	2	3	4	5	6	7						
51.	I treat the course material as a starting point and try to develop my own ideas about it.	1	2	3	4	5	6	7						
52.	I find it hard to stick to a study schedule.	1	2	3	4	5	6	7						
53.	When I study for this class, I pull together information from different sources, such as lectures, readings, and discussions.	1	2	3	4	5	6	7						
54.	Before I study new course material thoroughly, I often skim it to see how it is organized.	1	2	3	4	5	6	7						
55.	I ask myself questions to make sure I understand the material I have been studying in this class.	1	2	3	4	5	6	7						
56.	I try to change the way I study in order to fit the course requirements and the instructor's teaching style.	1	2	3	4	5	6	7						
57.	I often find that I have been reading for this class but don't know what it was all about.	1	2	3	4	5	6	7						
58.	I ask the instructor to clarify concepts I don't understand well.	1	2	3	4	5	6	7						
59.	I memorize key words to remind me of important concepts in this class.	1	2	3	4	5	6	7						
60.	When course work is difficult, I either give up or only study the easy parts.	1	2	3	4	5	6	7						

	not at all true of me							very true of me
61. I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for this course.	1	2	3	4	5	6	7	
62. I try to relate ideas in this subject to those in other courses whenever possible.	1	2	3	4	5	6	7	
63. When I study for this course, I go over my class notes and make an outline of important concepts.	1	2	3	4	5	6	7	
64. When reading for this class, I try to relate the material to what I already know.	1	2	3	4	5	6	7	
65. I have a regular place set aside for studying.	1	2	3	4	5	6	7	
66. I try to play around with ideas of my own related to what I am learning in this course.	1	2	3	4	5	6	7	
67. When I study for this course, I write brief summaries of the main ideas from the readings and my class notes.	1	2	3	4	5	6	7	
68. When I can't understand the material in this course, I ask another student in this class for help.	1	2	3	4	5	6	7	
69. I try to understand the material in this class by making connections between the readings and the concepts from the lectures.	1	2	3	4	5	6	7	
70. I make sure that I keep up with the weekly readings and assignments for this course.	1	2	3	4	5	6	7	
71. Whenever I read or hear an assertion or conclusion in this class, I think about possible alternatives.	1	2	3	4	5	6	7	

		not at all true of me							very true of me						
72.	I make lists of important items for this course and memorize the lists.	1	2	3	4	5	6	7							
73.	I attend this class regularly.	1	2	3	4	5	6	7							
74.	Even when course materials are dull and uninteresting, I manage to keep working until I finish.	1	2	3	4	5	6	7							
75.	I try to identify students in this class whom I can ask for help if necessary.	1	2	3	4	5	6	7							
76.	When studying for this course I try to determine which concepts I don't understand well.	1	2	3	4	5	6	7							
77.	I often find that I don't spend very much time on this course because of other activities.	1	2	3	4	5	6	7							
78.	When I study for this class, I set goals for myself in order to direct my activities in each study period.	1	2	3	4	5	6	7							
79.	If I get confused taking notes in class, I make sure I sort it out afterwards.	1	2	3	4	5	6	7							
80.	I rarely find time to review my notes or readings before an exam.	1	2	3	4	5	6	7							
81.	I try to apply ideas from course readings in other class activities such as lecture and discussion.	1	2	3	4	5	6	7							

VII. SAMPLE FEEDBACK FORM

MOTIVATED STRATEGIES FOR LEARNING QUESTIONNAIRE (MSLQ)

Earlier this semester you took a questionnaire called the Motivated Strategies for Learning Questionnaire (also called the MSLQ). The purpose of this questionnaire was to gather some information about your study habits, your learning skills, and your motivation for schoolwork. As promised, we are providing you with feedback from the MSLQ on your study habits, learning skills, and motivation. This handout describes how to interpret your scores, so you can figure out what the scores mean.

This feedback is intended to help you determine your own strengths and weaknesses as a student. From past experience, we have found that students like to have some information on how other students do on the MSLQ. Therefore, we have included information about the average levels of motivation and learning skills for the students in your instructor's class. Your class as a whole may be generally high in some areas and low in others, so think about your own skills rather than about comparisons with others.

You may want to use this feedback to do something about changing your study skills or motivation. All of the motivational and study skills mentioned on your feedback sheet are learnable. This is an important idea to remember, especially in college. You can decide whether you want to change these aspects of your learning style. We have provided some hints to go along with each scale. We hope you find these suggestions helpful. But keep in mind that these are not the only ways to improve each area. You may want to seek additional help from services available at your institution.

How to interpret your scores. All the scales are based on a seven point scale. Although some items were worded negatively, we have reversed these questions so that in general, a higher score such as a 4, 5, 6, or 7 is better than a lower score like a 1, 2, or 3. The only exception is the test anxiety scale, where a high score means more worrying.

The average score for your class, as well as the breakdown of the scores for the bottom 25%, middle 50%, and the top 25%, is provided for each scale. If your score is at the bottom 25% on a scale, this means that most of the students in your class are reporting more motivation or use of learning strategies than you. If your score is in the middle 50%, then you are similar to most students. If your score is in the top 25%, then you think you are more motivated or use more learning strategies than other students. In general, if your scores are above 3, then you are doing well. If you are below 3 on more than six of the nine scales, you may want to seek help from your instructor or the counseling services at your institution.

MOTIVATION SCALES: The first three scales refer to your motivation for the course, confidence in doing well in school, and your anxiety about taking tests.

I. Motivation: Interest

This is a measure of how interested you are in the material being covered in this course. A high score means you like the subject matter and are very interested in the content area of this class.

Your score: _____

Class mean: _____

Bottom 25%: _____

Middle 50%: _____

Top 25%: _____

Suggestions: Skim the table of contents of the class textbook or take a look at the course syllabus and make a list of the three topics that most interest you and of the three topics that least interest you. Pay particular attention to these topics. What is it about the three most interesting topics that makes you like them so much? What is it about the other three topics that makes them uninteresting? Can you find any of the characteristics of the three most interesting topics in the three least interesting topics? If you identify what it is about the three most interesting topics that makes you like them so much, you may be able to apply what you found to the three least interesting ones, and perhaps you'll find that those uninteresting topics aren't so uninteresting after all!

II. Motivation: Expectancy for Success

This is a measure of your perceptions of your potential success in this course and of your self-confidence for understanding the course content. A high score means that you think you will do well in the course, and feel confident that you will be able to master the course material.

Your score: _____

Class mean: _____

Bottom 25%: _____

Middle 50%: _____

Top 25%: _____

Suggestions: Evaluate your current approach to a course assignment from different points of view. For example, describe the effectiveness and ineffectiveness of your own approach from your own perspective. Then imagine how a classmate might evaluate your approach. By analyzing the way you are tackling an assignment, you may be able to figure out what you're doing right and what you're doing wrong and can change your approach. A better understanding of the way you learn, what works and what doesn't work, may help increase your confidence in doing well in this course.

III. Test Anxiety

This is a measure of how much you worry about tests and how often you have distracting thoughts when you take an exam. In contrast to the other scales, a high score here means that you are anxious in testing situations.

Your score: _____

Class mean: _____

Bottom 25%: _____

Middle 50%: _____

Top 25%: _____

Suggestions: Developing better study skills usually results in less anxiety. Prepare well for class and try to complete assignments on time. Try not to wait until the last minute to get things done or to get ready for an exam. Doing this should help build your confidence at test time and hopefully reduce test anxiety. When taking a test, concentrate on one item at a time, and if you're stumped on a question, move on and go back to the question later. Remind yourself that you've prepared well and if you can't answer some questions, it's ok, you'll still be able to answer the others.

COGNITIVE SCALES

The remaining six scales refer to different kinds of study skills and learning strategies you reported using for this course.

IV. Cognitive Strategy: Rehearsal

This scale is a measure of how often you use study strategies such as rereading class notes and course readings and memorizing lists of key words and concepts. A high score means you use these strategies fairly often.

Your score:	_____
Class mean:	_____
Bottom 25%:	_____
Middle 50%:	_____
Top 25%:	_____

Suggestions: List the important terms and topics in the course. Define them and repeat them out loud. Break up that list into smaller lists that are made up of closely related items. Make up images or rhymes to help you remember those lists. Generate test items to help you measure your recall.

V. Cognitive Strategy: Elaboration

This scale reflects how often you attempt to summarize or paraphrase (put into your own words) the material you read in your textbooks, and how often you try to relate the material to what you already know or have learned. A high score means that you use these strategies fairly often. These strategies usually result in better performance than rehearsal strategies.

Your score: _____

Class mean: _____

Bottom 25%: _____

Middle 50%: _____

Top 25%: _____

Suggestions: Paraphrase and summarize important information. Use your own words to describe the material covered during lecture or in assigned reading. Pretend you're the teacher and are trying to explain the topic to students! Try to figure out how each topic relates to each other. What are the connections between what you've heard in lecture, talked about in discussion, read in the book?

VI. Cognitive Strategy: Organization

This scale refers to your ability to select the main ideas from your readings as well as your attempts to organize and put together what you need to learn in this course.

Your score: _____

Class mean: _____

Bottom 25%: _____

Middle 50%: _____

Top 25%: _____

Suggestions: Outline course material and identify where the text and lecture overlap and don't overlap. This will give you a starting point in developing connections between ideas presented in two different contexts. Make charts, diagrams, or tables of the important concepts. Something like a flowchart or a tree diagram is usually very helpful in trying to understand how different ideas "go together."

VII. Metacognition

This is a measure of how often you think about what you are reading or studying as you do your schoolwork. For example, do you monitor your attention while you read or do you often find that you have read 10 pages in your textbook and can't remember anything about it? Do you adjust your reading speed if you are reading something difficult in comparison to reading the newspaper? A high score means that you try to plan your work and check on whether you understand the course material.

Your score: _____

Class mean: _____

Bottom 25%: _____

Middle 50%: _____

Top 25%: _____

Suggestions: Skim the reading material before you begin to see how it is organized. Look at the headings and subheadings of the text to give yourself an idea of how things are related to each other. While reading, ask yourself questions about the paragraph you have just read and scribble key words in the margins of the book or in a notebook. Try to determine which concepts you don't understand well. Although this method takes longer initially, you are more likely to remember what you have read. This saves you time later when studying for a test.

VIII. Resource Management: Time and Study Space

This scale is a measure of how well you manage your time and schedule, and your use of a place to study. A high score means that you have a method for managing your schedule and you try to study somewhere where you can finish your schoolwork.

Your score:	_____
Class mean:	_____
Bottom 25%:	_____
Middle 50%:	_____
Top 25%:	_____

Suggestions: Keep track of what you do with your study time for a week. Write down your goals for each study period and then write down what you actually accomplished during that study period. Analyze the chart at the end of the week. You may want to change the place where you study, or the times when you study, or who you study with. Try to come up with a study schedule that works best for you.

IX. Resource Management: Self-Effort

This scale refers to your willingness to try hard on your schoolwork, even when the work is difficult. A high score means that you try hard and exert effort in your studying.

Your score: _____

Class mean: _____

Bottom 25%: _____

Middle 50%: _____

Top 25%: _____

Suggestions: Keep a list of the topics that you find yourself procrastinating instead of studying for. Try to analyze why you postpone studying these topics by discussing them with other students. Talking with them may lead you to consider an approach that may help you act more quickly instead of delaying studying the material.

VIII. REFERENCES

- Hayduk, L.A. (1987). Structural equation modeling with LISREL: Essentials and advances. Baltimore: Johns Hopkins University Press.
- Joreskog, K.G., & Sorbom, D. (1986). LISREL: Analysis of linear structural relationships by the method of maximum likelihood: User's guide. Mooresville, IN: Scientific Software Inc.
- McKeachie, W.J., Pintrich, P.R., & Lin, Y.G. (1985). Teaching learning strategies. Educational Psychologist, 20, 153-160.
- McKeachie, W.J., Pintrich, P.R., Lin, Y.G., & Smith, D. (1986). Teaching and learning in the college classroom: A review of the research literature. Ann Arbor, MI: National Center for Research to Improve Postsecondary Teaching and Learning, The University of Michigan.
- Pintrich, P.R. (1988a). A process-oriented view of student motivation and cognition. In J. Stark & L. Mets (Eds.), Improving teaching and learning through research: New directions for institutional research (Vol. 57, pp. 65-79). San Francisco: Jossey-Bass.
- Pintrich, P.R. (1988b). Student learning and college teaching. In R.E. Young & K.E. Eble (Eds.), College teaching and learning: Preparing for new commitments. New directions for teaching and learning (Vol 33, pp. 71-86). San Francisco: Jossey-Bass.
- Pintrich, P.R. (1989). The dynamic interplay of student motivation and cognition in the college classroom. In C. Ames & M. Maehr (Eds.), Advances in motivation and achievement: Motivation-enhancing environments (Vol. 6, pp. 117-160). Greenwich, CT: JAI Press.
- Pintrich, P.R., & DeGroot, E. (1990). Motivational and self-regulated learning components of classroom academic performance. Journal of Educational Psychology, 82, 33-40.
- Pintrich, P.R., & Garcia, T. (1991, in press). Student goal orientation and self-regulation in the college classroom. In M. Maehr & P. R. Pintrich (Eds.), Advances in motivation and achievement: Goals and self-regulatory processes, (Vol. 7). Greenwich, CT: JAI Press.
- Pintrich, P.R., McKeachie, W.J., & Lin, Y.G. (1987). Teaching a course in learning to learn. Teaching of Psychology, 14, 81-86.

APPENDIX A. DEMOGRAPHIC INFORMATION

Three hundred eighty students took this version of the MSLQ at the end of the Winter 1990 semester. Eighty nine of these students did not receive demographic sheets in the questionnaire packets they received; therefore, the maximum number of responses to each demographic question is 291. Note that responding to any question on the MSLQ is optional, and some students elected not to respond to certain questions.

1. Gender

	<u>Frequency</u>	<u>Percent</u>
Male	99	26.3
Female	192	50.5
Missing	89	23.2

2. What year did you graduate from high school? (years 1933-1979 were collapsed)

	<u>Frequency</u>	<u>Percent</u>
1933 - 1970	19	5.0
1971 - 1979	30	7.9
1980	3	.8
1981	8	2.1
1982	8	2.1
1983	17	4.5
1984	17	4.5
1985	38	10.0
1986	49	12.9
1987	51	13.4
1988	26	6.8
1989	19	5.0
Missing	94	24.7

3. Class level

	<u>Frequency</u>	<u>Percent</u>
Freshman	20	5.3
Sophomore	38	10.0
Junior	90	23.7
Senior	133	35.0
Graduate Student	7	1.8
Missing	92	24.2

4. Ethnic background

	<u>Frequency</u>	<u>Percent</u>
Afro-American or Black	14	3.7
Asian-American	9	2.4
Caucasian	252	66.3
Hispanic or Spanish Speaking	4	1.1
Other	9	2.4
Missing	92	24.2

5. How many hours per week do you work for pay?

	<u>Frequency</u>	<u>Percent</u>
None	62	16.3
2-10	31	8.2
11-15	27	7.2
16-20	64	16.9
21-25	34	8.9
26-30	21	5.5
31-40	37	9.7
41-61	8	2.1
Missing	96	25.2

6. How many other college level courses have you had in this subject area?

	<u>Frequency</u>	<u>Percent</u>
None	72	18.9
1	51	13.4
2	23	6.1
3	27	7.1
4	19	5.0
5	20	5.3
6	12	3.2
7	13	3.4
8	11	2.9
9	7	1.8
10	11	2.9
11-20	12	3.2
Missing	102	27.0

7. Fulfills distribution requirement

	<u>Frequency</u>	<u>Percent</u>
Yes	193	50.8
No	88	23.2
Missing	99	26.0

8. Content seems interesting

	<u>Frequency</u>	<u>Percent</u>
Yes	213	56.1
No	67	17.6
Missing	100	26.3

9. Is required of all students at college

	<u>Frequency</u>	<u>Percent</u>
Yes	18	4.7
No	262	68.9
Missing	100	26.3

10. Will be useful to me in other courses

	<u>Frequency</u>	<u>Percent</u>
Yes	192	50.5
No	84	22.2
Missing	104	27.3

11. Is an easy elective

	<u>Frequency</u>	<u>Percent</u>
Yes	21	5.5
No	257	67.6
Missing	102	26.8

12. Will help improve my academic skills

	<u>Frequency</u>	<u>Percent</u>
Yes	145	38.2
No	133	35.0
Missing	102	26.8

13. Is required for major or program

	<u>Frequency</u>	<u>Percent</u>
Yes	211	55.5
No	79	20.8
Missing	90	23.7

14. Was recommended by a friend

	<u>Frequency</u>	<u>Percent</u>
Yes	32	8.4
No	245	64.5
Missing	103	27.1

15. Was recommended by a counselor

	<u>Frequency</u>	<u>Percent</u>
Yes	55	14.5
No	223	58.7
Missing	102	26.8

16. Will improve career prospects

	<u>Frequency</u>	<u>Percent</u>
Yes	162	42.6
No	117	30.8
Missing	101	26.6

17. Fits into my schedule

	<u>Frequency</u>	<u>Percent</u>
Yes	165	43.4
No	115	30.3
Missing	100	26.3

18. Distribution by subject area

	<u>Frequency</u>	<u>Percent</u>
Chemistry	7	1.8
Computer Science	26	6.8
Ecology	28	7.4
Economics	9	2.4
Education	25	6.6
English	56	14.7
Geography/Geology	16	4.2
History	8	2.1
Microbiology	10	6.6
Philosophy	32	8.4
Physical Education	18	4.7
Psychology	125	32.9
Sociology	10	2.6
Spanish	10	2.6

APPENDIX B. SCALE CORRELATIONS

Intr:	Intrinsic Goal Orientation
Extr:	Extrinsic Goal Orientation
Tskv:	Task Value
Cont:	Control Beliefs about Learning
Slfef:	Self-Efficacy for Learning & Performance
Tanx:	Test Anxiety
Reh:	Rehearsal
Elab:	Elaboration
Org:	Organization
Crit:	Critical Thinking
Mcg:	Metacognitive Self-Regulation
Tsdy:	Time and Study Environment
Eff:	Effort Regulation
Prln:	Peer Learning
Hsk:	Help Seeking

	Intr	Extr	Tskv	Cont	Slfef	Tanx	Reh	Elab	Org	Crit	Mcg	Tsdy	Eff	Prln
Extr	.15													
Tskv	.68	.18												
Cont	.29	.14	.30											
Slfef	.59	.15	.51	.44										
Tanx	-.15	.23	-.14	-.10	-.37									
Reh	.10	.23	.12	.02	.10	.11								
Elab	.48	.13	.44	.22	.35	-.13	.36							
Org	.27	.09	.19	.02	.21	-.05	.49	.52						
Crit	.58	.06	.39	.18	.42	-.11	.15	.57	.31					
Mcg	.50	.07	.45	.17	.46	-.24	.39	.67	.55	.53				
Tsdy	.32	.13	.37	.00	.32	-.17	.38	.44	.44	.25	.58			
Eff	.43	.11	.47	.07	.44	-.21	.26	.44	.36	.25	.61	.70		
Prln	.13	.20	.09	-.03	.05	.10	.21	.19	.23	.25	.15	.10	.05	
Hsk	.10	.08	.16	.00	.08	.08	.18	.28	.22	.19	.25	.21	.18	.55

APPENDIX C: CONFIRMATORY FACTOR ANALYSES RESULTS

We tested for the factor validity of the MSLQ scales by running two confirmatory analyses: one for the set of motivation items and another for the set of cognitive and metacognitive strategy items. Lisrel VI (Joreskog & Sorbom, 1986) was used to estimate and test our models.

In contrast to exploratory factor analysis, confirmatory factor analysis requires the researcher to indicate which items (indicators) should fall onto which factors (latent variables). Parameter estimates for the model specified are generated, and tests for goodness of fit are made. The goodness of fit tests assess how well correlations reproduced given the model specified "match up" with the input set of correlations.

In other words, the researcher is making a quantitative test of the theory: for example, we have four items that we assume to be indicators of a construct called "Intrinsic Goal Orientation". The confirmatory factor analysis tests how closely the input correlations can be reproduced given the constraints that items 1, 16, 22, and 24 fall onto one specific factor. There are four items we are assuming to tap into a factor called "Extrinsic Goal Orientation"; six items for "Task Value" and so forth. The 31 motivation items were tested to see how well they fit six latent factors: intrinsic goal orientation, extrinsic goal orientation, task value, control beliefs about learning, self-efficacy for learning and performance, and test anxiety. The 50 cognitive strategy items were tested to see how well they fit nine latent factors: rehearsal, elaboration, organization, critical thinking, metacognitive self-regulation, time and study environment management, effort regulation, peer learning, and help seeking. Each item on the MSLQ was constrained to fall on one specific factor.

The parameter estimates for the latent factors are presented below (standardized solutions are given). Lambda-ksi estimates are analogous to factor loadings in an exploratory factor analysis, and values of .8 or higher for these parameters indicate well-defined latent constructs. Phi values are the estimates for the covariances between the latent constructs; these are analogous to the scale correlations given in Appendix B. Note that the values presented are analogous to, but not equivalents of, factor loadings and scale correlations.

We have also provided several omnibus fit statistics: the chi-squared to degrees of freedom ratio (X^2/df); the goodness of fit index (GFI; generated by the LISREL VI program); the root mean residual (RMR); and Hoelter's critical number (CN). A X^2/df ratio of less than 5 is considered to be indicative of a good fit between the observed and reproduced correlation matrices (Hayduk, 1987). A GFI of .9 or greater; an RMR of .05 or less; and a CN of 200 and above are heuristic values that indicate that the models "fits" the input data well.

Our results are detailed in the following pages. While the goodness of fit indices are not stellar, they are, nevertheless, quite reasonable values, given

the fact that we are spanning a broad range of courses and subject domains. Motivational attitudes, and deployment of the various learning strategies may differ depending upon course characteristics, teacher demands, and individual student characteristics. Overall, the models show sound structures, and one can reasonably claim factor validity for the MSLQ scales.

Motivation Items $\chi^2/df = 3.49$

GFI = .77

RMR = .07

CN = 122

Lambda - Ksi Estimates

	<u>Indicator</u>	<u>LX estimate</u>
Intrinsic Goal Orientation	q1	.64
	q16	.69
	q22	.66
	q24	.55
Extrinsic Goal Orientation	q7	.71
	q11	.58
	q13	.48
	q30	.44
Task Value	q4	.57
	q10	.64
	q17	.88
	q23	.86
	q26	.88
	q27	.84
Control Beliefs about Learning	q2	.57
	q9	.38
	q18	.84
	q25	.47

	<u>Indicator</u>	<u>LX estimate</u>
Self-Efficacy for Learning and Performance		
	q5	.83
	q6	.70
	q12	.63
	q15	.71
	q20	.86
	q21	.89
	q29	.77
	q31	.87
Test Anxiety		
	q3	.60
	q8	.42
	q14	.62
	q19	.88
	q28	.76

Phi Estimates

	Intr	Extr	Tskv	Cont	Slfef
Extr	.27				
Tskv	.83	.24			
Cont	.54	.18	.45		
Slfef	.69	.26	.55	.66	
Tanx	-.18	.22	-.17	-.26	-.39

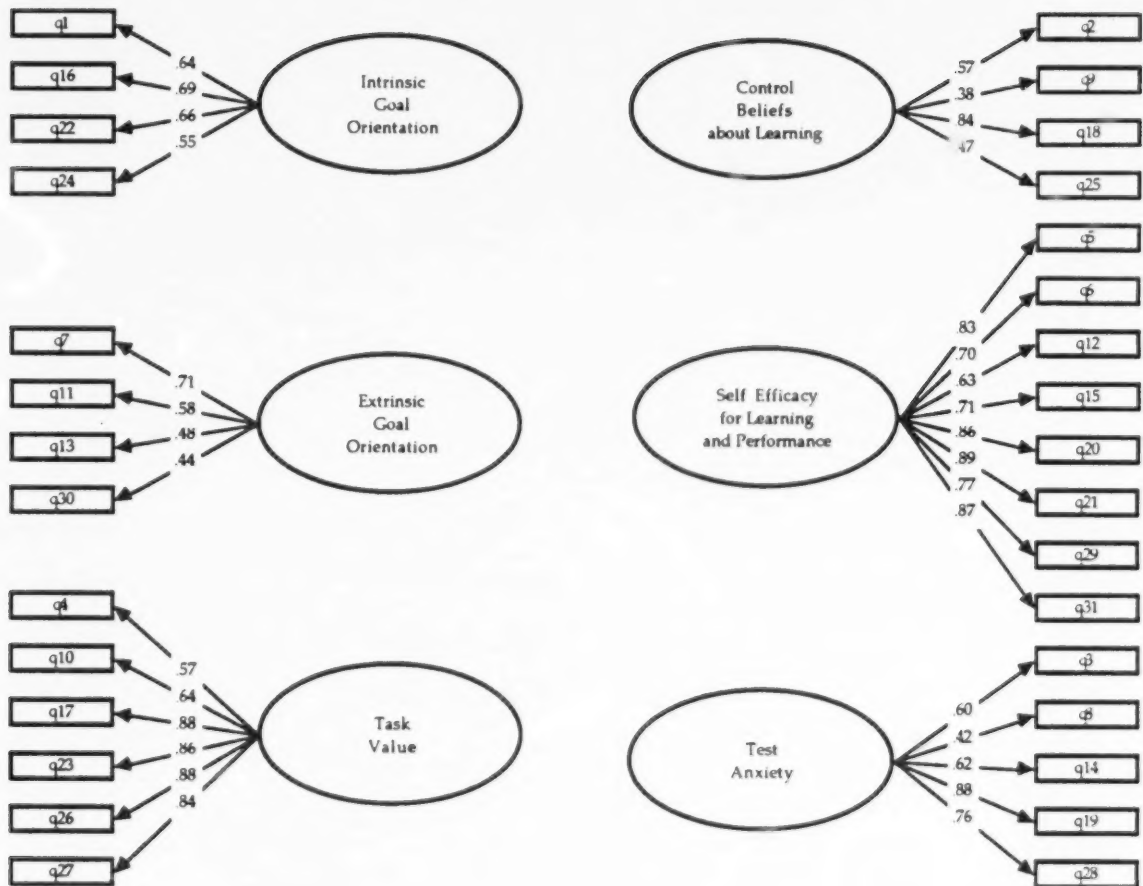


Figure 1. Structural model for the motivation items.

Learning Strategies Items $\chi^2/df = 2.26$

GFI = .78

RMR = .08

CN = 180

Lambda - Ksi Estimates

	<u>Indicator</u>	<u>LX estimate</u>
Rehearsal	q39	.62
	q46	.63
	q59	.56
	q72	.58
Elaboration	q53	.60
	q62	.60
	q64	.74
	q67	.42
	q69	.71
	q81	.65
Organization	q32	.57
	q42	.55
	q49	.45
	q63	.75
Critical Thinking	q38	.49
	q47	.76
	q51	.66
	q66	.74
	q71	.67

	<u>Indicator</u>	<u>LX estimate</u>
Metacognitive Self-Regulation		
	q33	.40
	q36	.44
	q41	.47
	q44	.54
	q54	.53
	q55	.58
	q56	.43
	q57	.35
	q61	.60
	q76	.61
	q78	.55
	q79	.50
Time and Study Environment		
	q35	.52
	q43	.81
	q52	.52
	q65	.56
	q70	.64
	q73	.37
	q77	.48
	q80	.40
Effort Regulation		
	q37	.53
	q48	.65
	q60	.52
	q74	.74
Peer Learning		
	q34	.54
	q45	.82
	q50	.84
Help Seeking		
	q40	.20
	q58	.17
	q68	.90
	q75	.79

Phi Estimates

	Rehr	Elab	Org	Crit	Mcg	Tsdy	Eff	Prln
Elab	.46							
Org	.71	.65						
Crit	.27	.76	.48					
Mcg	.58	.85	.75	.73				
Tsdy	.55	.57	.59	.41	.76			
Eff	.45	.59	.48	.38	.78	.95		
Prln	.28	.19	.28	.28	.23	.13	.07	
Hsk	.31	.23	.28	.14	.27	.20	.19	.70

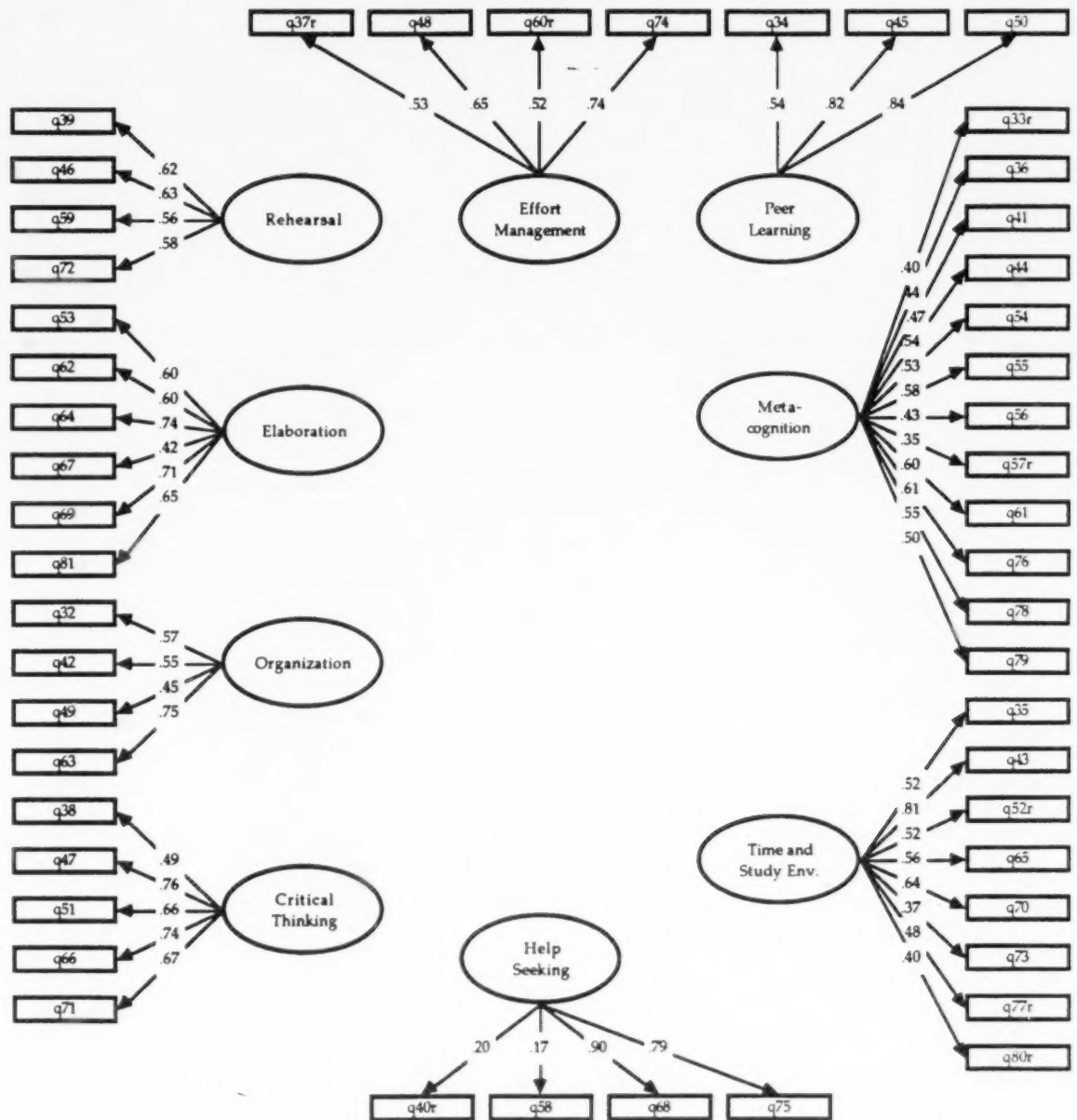


Figure 2. Structural model of the cognitive strategy items.

